AMENDMENTS TO THE SPECIFICATION

Please amend the specification as follows:

Please replace the second paragraph on page 5, lines 4 to 6, with the following amended paragraph:

Figures 1A-1X (Figure 1A: SEQ ID NO:1 - nucleotide sequence and SEQ ID NO:2 - amino acid sequence; Figure 1B: SEQ ID NO:3 - nucleotide sequence and SEQ ID NO:4 - amino acid sequence; Figure 1C: SEQ ID NO:5 - nucleotide sequence and SEQ ID NO:6 - amino acid sequence; Figure 1D: SEQ ID NO:7 - nucleotide sequence and SEQ ID NO:8 - amino acid sequence; Figure 1E: SEQ ID NO:9 - nucleotide sequence and SEQ ID NO:10 - amino acid sequence; Figure 1F: SEQ ID NO:11 - nucleotide sequence and SEQ ID NO:12 - amino acid sequence; Figure 1G: SEQ ID NO:13 - nucleotide sequence and SEQ ID NO:14 - amino acid sequence; Figure 1H: SEQ ID NO:15 - nucleotide sequence and SEQ ID NO:16 - amino acid sequence; Figure 1I: SEQ ID NO:17 - nucleotide sequence and SEQ ID NO:18 - amino acid sequence; Figure 1J: SEQ ID NO:19 - nucleotide sequence and SEQ ID NO:20 - amino acid sequence; Figure 1K: SEQ ID NO:21 - nucleotide sequence and SEQ ID NO:22 - amino acid sequence; Figure 1L: SEQ ID NO:23 - nucleotide sequence and SEQ ID NO:24 - amino acid sequence; Figure 1M: SEQ ID NO:25 - nucleotide sequence and SEQ ID NO:26 - amino acid sequence; Figure 1N: SEQ ID NO:27 - nucleotide sequence and SEQ ID NO:28 - amino acid sequence; Figure 1O: SEQ ID NO:29 - nucleotide sequence and SEQ ID NO:30 - amino acid sequence; Figure 1P: SEQ ID NO:31 - nucleotide sequence and SEQ ID NO:32 - amino acid sequence; Figure 1Q: SEQ ID NO:33 - nucleotide sequence and SEQ ID NO:34 - amino acid sequence; Figure 1R: SEQ ID NO:35 - nucleotide sequence and SEQ ID NO:36 - amino acid sequence; Figure 1S: SEQ ID NO:37 - nucleotide sequence and SEQ ID NO:38 - amino acid sequence; Figure 1T: SEQ ID NO:39 - nucleotide sequence and SEQ ID NO:40 - amino acid sequence; Figure 1U: SEQ ID NO:41 - nucleotide sequence and SEQ ID NO:42 - amino acid sequence; Figure 1V: SEQ ID NO:43 - nucleotide sequence and SEQ ID NO:44 - amino acid sequence; Figure 1W: SEQ ID NO:45 - nucleotide sequence and SEQ ID NO:46 - amino acid sequence; and Figure 1X: SEQ ID NO:47 - nucleotide sequence and SEQ ID NO:48 - amino acid

sequence) show the nucleotide and deduced amino acid sequences of the enzymes of the present invention. Sequencing was performed using a 378 automated DNA sequencer (Applied Biosystems, Inc.).

Please replace the fourth paragraph on page 7, lines 21 to 23, with the following amended paragraph:

In accordance with an aspect of the present invention, there are provided isolated nucleic acid molecules (polynucleotides) which encode for the mature enzymes having the deduced amino acid sequence of Figure 1A-1X (Figure 1A: SEQ ID NO:1 - nucleotide sequence and SEQ ID NO:2 - amino acid sequence; Figure 1B: SEQ ID NO:3 - nucleotide sequence and SEQ ID NO:4 - amino acid sequence; Figure 1C: SEQ ID NO:5 - nucleotide sequence and SEQ ID NO:6 - amino acid sequence; Figure 1D: SEQ ID NO:7 - nucleotide sequence and SEQ ID NO:8 - amino acid sequence; Figure 1E: SEQ ID NO:9 - nucleotide sequence and SEQ ID NO:10 - amino acid sequence; Figure 1F: SEQ ID NO:11 - nucleotide sequence and SEQ ID NO:12 - amino acid sequence; Figure 1G: SEQ ID NO:13 - nucleotide sequence and SEQ ID NO:14 - amino acid sequence; Figure 1H: SEQ ID NO:15 - nucleotide sequence and SEQ ID NO:16 - amino acid sequence; Figure 1I: SEQ ID NO:17 - nucleotide sequence and SEQ ID NO:18 - amino acid sequence; Figure 1J: SEQ ID NO:19 - nucleotide sequence and SEQ ID NO:20 - amino acid sequence; Figure 1K: SEQ ID NO:21 - nucleotide sequence and SEQ ID NO:22 - amino acid sequence; Figure 1L: SEQ ID NO:23 - nucleotide sequence and SEQ ID NO:24 - amino acid sequence; Figure 1M: SEQ ID NO:25 - nucleotide sequence and SEQ ID NO:26 - amino acid sequence; Figure 1N: SEQ ID NO:27 - nucleotide sequence and SEQ ID NO:28 - amino acid sequence; Figure 1O: SEQ ID NO:29 - nucleotide sequence and SEQ ID NO:30 - amino acid sequence; Figure 1P: SEQ ID NO:31 - nucleotide sequence and SEQ ID NO:32 - amino acid sequence; Figure 1Q: SEQ ID NO:33 - nucleotide sequence and SEQ ID NO:34 - amino acid sequence; Figure 1R: SEQ ID NO:35 - nucleotide sequence and SEQ ID NO:36 - amino acid sequence; Figure 1S: SEQ ID NO:37 - nucleotide sequence and SEQ ID NO:38 - amino acid sequence; Figure 1T: SEQ ID NO:39 - nucleotide sequence and SEQ ID NO:40 - amino acid sequence; Figure 1U: SEQ ID NO:41 - nucleotide sequence and SEQ ID NO:42 - amino acid

sequence; Figure 1V: SEQ ID NO:43 - nucleotide sequence and SEQ ID NO:44 - amino acid sequence; Figure 1W: SEQ ID NO:45 - nucleotide sequence and SEQ ID NO:46 - amino acid sequence; and Figure 1X: SEQ ID NO:47 - nucleotide sequence and SEQ ID NO:48 - amino acid sequence).

Please replace the paragraph on page 10, lines 8 to 13, with the following amended paragraph:

Endoglucanase polypeptides included in the invention can have one of the amino acid sequences of Endoglucanases shown in Figures 1A through 1X ~~(SEQ ID NO:NO:2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 36, 38, 40, 42, 44, 46, and 48)~~ (Figure 1A: SEQ ID NO:1 - nucleotide sequence and SEQ ID NO:2 - amino acid sequence; Figure 1B: SEQ ID NO:3 - nucleotide sequence and SEQ ID NO:4 - amino acid sequence; Figure 1C: SEQ ID NO:5 - nucleotide sequence and SEQ ID NO:6 - amino acid sequence; Figure 1D: SEQ ID NO:7 - nucleotide sequence and SEQ ID NO:8 - amino acid sequence; Figure 1E: SEQ ID NO:9 - nucleotide sequence and SEQ ID NO:10 - amino acid sequence; Figure 1F: SEQ ID NO:11 - nucleotide sequence and SEQ ID NO:12 - amino acid sequence; Figure 1G: SEQ ID NO:13 - nucleotide sequence and SEQ ID NO:14 - amino acid sequence; Figure 1H: SEQ ID NO:15 - nucleotide sequence and SEQ ID NO:16 - amino acid sequence; Figure 1I: SEQ ID NO:17 - nucleotide sequence and SEQ ID NO:18 - amino acid sequence; Figure 1J: SEQ ID NO:19 - nucleotide sequence and SEQ ID NO:20 - amino acid sequence; Figure 1K: SEQ ID NO:21 - nucleotide sequence and SEQ ID NO:22 - amino acid sequence; Figure 1L: SEQ ID NO:23 - nucleotide sequence and SEQ ID NO:24 - amino acid sequence; Figure 1M: SEQ ID NO:25 - nucleotide sequence and SEQ ID NO:26 - amino acid sequence; Figure 1N: SEQ ID NO:27 - nucleotide sequence and SEQ ID NO:28 - amino acid sequence; Figure 1O: SEQ ID NO:29 - nucleotide sequence and SEQ ID NO:30 - amino acid sequence; Figure 1P: SEQ ID NO:31 - nucleotide sequence and SEQ ID NO:32 - amino acid sequence; Figure 1Q: SEQ ID NO:33 - nucleotide sequence and SEQ ID NO:34 - amino acid sequence; Figure 1R: SEQ ID NO:35 - nucleotide sequence and SEQ ID NO:36 - amino acid sequence; Figure 1S: SEQ ID NO:37 - nucleotide sequence and SEQ ID NO:38 - amino acid sequence; Figure 1T: SEQ ID NO:39 -

nucleotide sequence and SEQ ID NO:40 - amino acid sequence; Figure 1U: SEQ ID NO:41 - nucleotide sequence and SEQ ID NO:42 - amino acid sequence; Figure 1V: SEQ ID NO:43 - nucleotide sequence and SEQ ID NO:44 - amino acid sequence; Figure 1W: SEQ ID NO:45 - nucleotide sequence and SEQ ID NO:46 - amino acid sequence; and Figure 1X: SEQ ID NO:47 - nucleotide sequence and SEQ ID NO:48 - amino acid sequence), ~~for example, the amino acid sequence of AEPIIIa (SEQ ID NO:2)~~. Endoglucanase polypeptides, such as those isolated from AEPIIIa, can be characterized by catalyzing the hydrolysis of the beta 1,4 glycosidic bonds in cellulose.

Please replace the second full paragraph on page 11, lines 12 to 22, with the following amended paragraph:

The invention also includes fragments of endoglucanase polypeptides that retain at least one endoglucanase-specific activity or epitope. Endoglucanase activity can be assayed by examining the catalysis of beta 1,4 glycosidic bonds in cellulose. For example, an endoglucanase polypeptide fragment containing, e.g., at least 8-10 amino acids can be used as an immunogen in the production of endoglucanase-specific antibodies. The fragment can contain, for example, an amino acid sequence that is conserved in endoglucanases, and this amino acid sequence can contain amino acids that are conserved in endoglucanases. Such fragments can easily be identified by comparing the sequences of endoglucanases found in Figures 1A-1X (Figure 1A: SEQ ID NO:1 - nucleotide sequence and SEQ ID NO:2 - amino acid sequence; Figure 1B: SEQ ID NO:3 - nucleotide sequence and SEQ ID NO:4 - amino acid sequence; Figure 1C: SEQ ID NO:5 - nucleotide sequence and SEQ ID NO:6 - amino acid sequence; Figure 1D: SEQ ID NO:7 - nucleotide sequence and SEQ ID NO:8 - amino acid sequence; Figure 1E: SEQ ID NO:9 - nucleotide sequence and SEQ ID NO:10 - amino acid sequence; Figure 1F: SEQ ID NO:11 - nucleotide sequence and SEQ ID NO:12 - amino acid sequence; Figure 1G: SEQ ID NO:13 - nucleotide sequence and SEQ ID NO:14 - amino acid sequence; Figure 1H: SEQ ID NO:15 - nucleotide sequence and SEQ ID NO:16 - amino acid sequence; Figure 1I: SEQ ID NO:17 - nucleotide sequence and SEQ ID NO:18 - amino acid sequence; Figure 1J: SEQ ID NO:19 - nucleotide sequence and SEQ ID NO:20 - amino acid sequence; Figure 1K: SEQ ID NO:21 - nucleotide sequence and SEQ ID NO:22 - amino acid

sequence; Figure 1L: SEQ ID NO:23 - nucleotide sequence and SEQ ID NO:24 - amino acid sequence; Figure 1M: SEQ ID NO:25 - nucleotide sequence and SEQ ID NO:26 - amino acid sequence; Figure 1N: SEQ ID NO:27 - nucleotide sequence and SEQ ID NO:28 - amino acid sequence; Figure 1O: SEQ ID NO:29 - nucleotide sequence and SEQ ID NO:30 - amino acid sequence; Figure 1P: SEQ ID NO:31 - nucleotide sequence and SEQ ID NO:32 - amino acid sequence; Figure 1Q: SEQ ID NO:33 - nucleotide sequence and SEQ ID NO:34 - amino acid sequence; Figure 1R: SEQ ID NO:35 - nucleotide sequence and SEQ ID NO:36 - amino acid sequence; Figure 1S: SEQ ID NO:37 - nucleotide sequence and SEQ ID NO:38 - amino acid sequence; Figure 1T: SEQ ID NO:39 - nucleotide sequence and SEQ ID NO:40 - amino acid sequence; Figure 1U: SEQ ID NO:41 - nucleotide sequence and SEQ ID NO:42 - amino acid sequence; Figure 1V: SEQ ID NO:43 - nucleotide sequence and SEQ ID NO:44 - amino acid sequence; Figure 1W: SEQ ID NO:45 - nucleotide sequence and SEQ ID NO:46 - amino acid sequence; and Figure 1X: SEQ ID NO:47 - nucleotide sequence and SEQ ID NO:48 - amino acid sequence). In addition to their use as peptide immunogens, the above-described endoglucanase fragments can be used in immunoassays, such as ELISAs, to detect the presence of endoglucanase-specific antibodies in samples.

Please replace the first paragraph on page 22, lines 1 to 8, with the following amended paragraph:

The enzymes of the present invention include an enzyme of Figure 1A-1X (Figure 1A: SEQ ID NO:1 - nucleotide sequence and SEQ ID NO:2 - amino acid sequence; Figure 1B: SEQ ID NO:3 - nucleotide sequence and SEQ ID NO:4 - amino acid sequence; Figure 1C: SEQ ID NO:5 - nucleotide sequence and SEQ ID NO:6 - amino acid sequence; Figure 1D: SEQ ID NO:7 - nucleotide sequence and SEQ ID NO:8 - amino acid sequence; Figure 1E: SEQ ID NO:9 - nucleotide sequence and SEQ ID NO:10 - amino acid sequence; Figure 1F: SEQ ID NO:11 - nucleotide sequence and SEQ ID NO:12 - amino acid sequence; Figure 1G: SEQ ID NO:13 - nucleotide sequence and SEQ ID NO:14 - amino acid sequence; Figure 1H: SEQ ID NO:15 - nucleotide sequence and SEQ ID NO:16 - amino acid sequence; Figure 1I: SEQ ID NO:17 - nucleotide sequence and SEQ ID NO:18 - amino acid sequence; Figure 1J: SEQ ID NO:19 -

nucleotide sequence and SEQ ID NO:20 - amino acid sequence; Figure 1K: SEQ ID NO:21 - nucleotide sequence and SEQ ID NO:22 - amino acid sequence; Figure 1L: SEQ ID NO:23 - nucleotide sequence and SEQ ID NO:24 - amino acid sequence; Figure 1M: SEQ ID NO:25 - nucleotide sequence and SEQ ID NO:26 - amino acid sequence; Figure 1N: SEQ ID NO:27 - nucleotide sequence and SEQ ID NO:28 - amino acid sequence; Figure 1O: SEQ ID NO:29 - nucleotide sequence and SEQ ID NO:30 - amino acid sequence; Figure 1P: SEQ ID NO:31 - nucleotide sequence and SEQ ID NO:32 - amino acid sequence; Figure 1Q: SEQ ID NO:33 - nucleotide sequence and SEQ ID NO:34 - amino acid sequence; Figure 1R: SEQ ID NO:35 - nucleotide sequence and SEQ ID NO:36 - amino acid sequence; Figure 1S: SEQ ID NO:37 - nucleotide sequence and SEQ ID NO:38 - amino acid sequence; Figure 1T: SEQ ID NO:39 - nucleotide sequence and SEQ ID NO:40 - amino acid sequence; Figure 1U: SEQ ID NO:41 - nucleotide sequence and SEQ ID NO:42 - amino acid sequence; Figure 1V: SEQ ID NO:43 - nucleotide sequence and SEQ ID NO:44 - amino acid sequence; Figure 1W: SEQ ID NO:45 - nucleotide sequence and SEQ ID NO:46 - amino acid sequence; and Figure 1X: SEQ ID NO:47 - nucleotide sequence and SEQ ID NO:48 - amino acid sequence), [[(]]in particular the mature enzyme[[)]], as well as enzymes which have at least 70% similarity (preferably at least 70% identity) to an enzyme ~~of Figure 1A-1X~~ of the invention and more preferably at least 90% similarity (more preferably at least 90% identity) to an enzyme ~~of Figure 1A-1X~~ of the invention and still more preferably at least 95% similarity (still more preferably at least 95% identity) to an enzyme ~~of Figure 1A-1X~~ of the invention and also include portions of such enzymes with such portion of the enzyme generally containing at least 30 amino acids and more preferably at least 50 amino acids.

Please replace the fourth paragraph on page 32, lines 14 to 20, with the following amended paragraph:

In one aspect of the invention, a method for producing an endoglucanase enzyme, such as those shown in Figures 1A-1X (Figure 1A: SEQ ID NO:1 - nucleotide sequence and SEQ ID NO:2 - amino acid sequence; Figure 1B: SEQ ID NO:3 - nucleotide sequence and SEQ ID NO:4 - amino acid sequence; Figure 1C: SEQ ID NO:5 - nucleotide sequence and SEQ ID NO:6 - amino acid sequence; Figure 1D: SEQ ID NO:7 - nucleotide sequence and SEQ ID NO:8 - amino acid

sequence; Figure 1E: SEQ ID NO:9 - nucleotide sequence and SEQ ID NO:10 - amino acid sequence; Figure 1F: SEQ ID NO:11 - nucleotide sequence and SEQ ID NO:12 - amino acid sequence; Figure 1G: SEQ ID NO:13 - nucleotide sequence and SEQ ID NO:14 - amino acid sequence; Figure 1H: SEQ ID NO:15 - nucleotide sequence and SEQ ID NO:16 - amino acid sequence; Figure 1I: SEQ ID NO:17 - nucleotide sequence and SEQ ID NO:18 - amino acid sequence; Figure 1J: SEQ ID NO:19 - nucleotide sequence and SEQ ID NO:20 - amino acid sequence; Figure 1K: SEQ ID NO:21 - nucleotide sequence and SEQ ID NO:22 - amino acid sequence; Figure 1L: SEQ ID NO:23 - nucleotide sequence and SEQ ID NO:24 - amino acid sequence; Figure 1M: SEQ ID NO:25 - nucleotide sequence and SEQ ID NO:26 - amino acid sequence; Figure 1N: SEQ ID NO:27 - nucleotide sequence and SEQ ID NO:28 - amino acid sequence; Figure 1O: SEQ ID NO:29 - nucleotide sequence and SEQ ID NO:30 - amino acid sequence; Figure 1P: SEQ ID NO:31 - nucleotide sequence and SEQ ID NO:32 - amino acid sequence; Figure 1Q: SEQ ID NO:33 - nucleotide sequence and SEQ ID NO:34 - amino acid sequence; Figure 1R: SEQ ID NO:35 - nucleotide sequence and SEQ ID NO:36 - amino acid sequence; Figure 1S: SEQ ID NO:37 - nucleotide sequence and SEQ ID NO:38 - amino acid sequence; Figure 1T: SEQ ID NO:39 - nucleotide sequence and SEQ ID NO:40 - amino acid sequence; Figure 1U: SEQ ID NO:41 - nucleotide sequence and SEQ ID NO:42 - amino acid sequence; Figure 1V: SEQ ID NO:43 - nucleotide sequence and SEQ ID NO:44 - amino acid sequence; Figure 1W: SEQ ID NO:45 - nucleotide sequence and SEQ ID NO:46 - amino acid sequence; and Figure 1X: SEQ ID NO:47 - nucleotide sequence and SEQ ID NO:48 - amino acid sequence), is provided. The method includes growing a host cell which contains a polynucleotide encoding the enzyme (e.g., SEQ ID NO:1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, or 47), under conditions which allow the expression of the nucleic acid, and isolating the enzyme encoded by the nucleic acid. Methods of culturing the host cell are described in the Examples and are known by those of skill in the art.